ALLOMATERNAL CARE AND ABUSE OF INFANTS AMONG HANUMAN LANGURS

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Early transfer of newborns is a hallmark of the subfamily Colobinae (Hrdy, 1976). A Presbytis entellus neonate may be taken from its mother shortly after birth and remain apart from her as much as 48% of the first day of life (Hrdy, 1975). Infant-sharing among langurs was first described by Charles McCann (1933). Subsequent fieldworkers have alternately reported that infants are passed around among all female troop members (Jay, 1965), particularly among juvenile and subadult females (Sugiyama, 1965), or, largely among females who do not have dependent offspring of their own (Ripley, 1965). This project was undertaken to obtain quantitative information on exactly which females are taking infants.

HANUMAN langurs near Mt. Abu, Rajasthan, in northwestern India, were observed for 1503 hours during 5 annual periods between 1971 and 1975 (Hrdy, 1977). Ad libitum observations of infant transfers were made on 4 troops. Newborns under 3 weeks of age were singled out for 101 hours of focal-infant sampling.

Seven hundred and eighty attempts to take infants were divided into 5 categories according to reproductive status of the caretaker: 1) nulliparous females (who constituted 28% of the available caretakers); 2) immature males (15%); 3) lactating, recent mothers (12-17%); 4) pregnant females nearing term (8-12%); 5) experienced mothers accompanied by an infant being weaned or else without an infant (32%). Immature males attempted to take infants on only 5 occasions (adult males did not participate at all); fifty-three per cent of attempts to take infants were by nulliparae, a category which comprised 33% of the remaining population of potential female caretakers. Most of this caretaking was by nulliparae over 15 months of age. Older nulliparae exceeded all other females in frequency with which they attempted to take infants, in the length of time that they retained them, on average 10 minutes, and in the degree of solicitude exhibited. Nulliparae under 15 months of age were less competent caretakers and were also less successful in their attempts to take infants, failing to obtain them on 66% of the occasions that they tried to take an infant from its mother or from another caretaker. Older nulliparae failed to obtain infants only 24% of the time. Even when successful, younger nulliparae kept infants just a short time, on average 2 minutes, before the infant was taken by another female.

1 Differences between females in different reproductive states remain statistically significant if attempts by males are removed from the sample.

2 This percentage fluctuated due to births in the course of the study.
Disproportionate representation of nulliparae among allomothers, and the apparent increase and improvement in caretaking with age, support the hypothesis that allomothers are learning maternal skills. Nevertheless, some 46% of allomaternal attempts were undertaken by females who had already given birth to one or more offspring. Seventy-nine per cent of attempts by experienced allomothers were by females who were about to give birth or who had recently done so. These females kept infants about half as long as older nulliparae did.

Possibly, hormonal changes during pregnancy increase responsiveness to infants. An endocrinological explanation for the high incidence of allomothering by pregnant females is consistent with what appears to be a persistent but diminishing interest in infants by recently delivered mothers who would either take another female's infant while her own was with an allomother, or else take and hold 2 infants simultaneously. If prior intimate exposure to infants increases maternal responsiveness to infants, allomothering would be adaptive behaviour for females on the verge of motherhood. It is equally plausible, however, that such behaviour might be a beneficial consequence of hormonal changes which evolved for quite different reasons (Hinde, 1975). An alternative, but by no means mutually exclusive explanation for allomothering by experienced females is information-gathering by females investigating an infant which is both a new troop member and a relative. This interpretation is supported by the high incidence of genital inspections performed by experienced females and might explain the remaining cases of allomothering (10%) by females who were neither in nulliparous training nor in pregnant preparation for motherhood.

Whereas nulliparae were exceedingly careful of their charges, multiparae often mistreated borrowed infants. 'Mistreatment' refers to forcibly pulling the infant off of its current caretaker, failing to adjust an infant which is not clinging properly so that the infant is dropped or dragged or so that the infant must cling precariously, pressing it against the ground, sitting on it or abandoning or biting it.

Older nulliparae mistreated infants on 22% of the occasions that they took them. Experienced females were abusive more than twice as often, 56% of the time, and this was so even though the former kept infants longer and thus had greater opportunity to abuse them. At first glance, this finding appears to contradict the hypothesis that maternal skill improves with practice. However, discovering that multiparae are more abusive can only undermine the learning-to-mother hypothesis if the mistreatment being measured actually reflects maternal competence. In fact, maternal skill may not be at issue. Though an infant may initially resist transfer, once taken, it clings like glue to whichever female is closest. Very probably the mistreatment measured derives from an allomother's efforts to rid herself of an encumbrance which she has 'tired' of but which is tenaciously clinging to her. This interpretation is consistent with both the relatively short duration of interest in infants exhibited by multiparae, and with the sorts of mistreatment observed. In contrast, the evident concern of nulliparae to keep the infant in a secure position and to keep it from complaining, as well as their habit of taking an infant and running away from other langurs could be strategies to postpone giving up their charges as long as possible.
**TABLE I**

The division of 780 allomaternal attempts to take infants (including both successful and abortive tries) into categories based on the reproductive status of the would-be caretaker

<table>
<thead>
<tr>
<th></th>
<th>Nulliparae</th>
<th>Immature Male</th>
<th>Lactating Mother</th>
<th>Pregnant near term</th>
<th>Experienced mother with weaning infant, or without associated infant</th>
</tr>
</thead>
<tbody>
<tr>
<td>% of Attempts</td>
<td>53%</td>
<td>.6%</td>
<td>15%</td>
<td>22%</td>
<td>10%</td>
</tr>
<tr>
<td>(N = 780)</td>
<td>(417)</td>
<td>(5)</td>
<td>(114)</td>
<td>(169)</td>
<td>(75)</td>
</tr>
<tr>
<td>% of available caretakers</td>
<td>28%</td>
<td>15%</td>
<td>12-17%*</td>
<td>8-12%*</td>
<td>32%</td>
</tr>
<tr>
<td>(N = 65)</td>
<td></td>
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* Number fluctuated due to females who gave birth in the course of the study period.
At Abu, availability\(^3\) and neonativity of infants seem more important than degree of relatedness in determining allomaternal choice of charges. A distantly related infant kidnapped from another troop for example, may be particularly attractive to allomothers. Lack of discrimination in choosing charges as well as occasional mistreatment of them, argues against either kin selection or 'group solidarity' as explanations for langur caretaking. Both the solicitude of nulliparae practicing with borrowed infants and the abuse of infants by multiparae shedding them qualify as selfish behaviour.

REFERENCES


\(^3\) Availability of an infant is ultimately due to the mother's willingness to give it up. Her permissiveness may reflect both the mother's stake in the acquisition of maternal competence by her relatives, and the benefits to her from freedom to forage.